



Engineering District 1

STRATEGIC SAFETY TRAINING

INITIATIVES TO REDUCE

ACCIDENTS AND INJURIES

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INTRODUCTION

The South Carolina Department of Transportation (SCDOT) is one of the largest state government agencies in South Carolina. SCDOT's function and purpose is the systematic planning, construction, maintenance, and operation of the state highway system and the development of a statewide mass transit system that is consistent with the needs and desires of the public. The goal of the Department is to provide adequate, safe, and efficient transportation services for the movement of people and goods. SCDOT has approximately 5200 employees statewide and approximately 3300 of these employees work to maintain the statewide transportation system in South Carolina's 46 counties. SCDOT has organized these 46 counties into 7 Districts. District 1 has the responsibility of maintaining the transportation system in 5 midlands counties – Lexington, Richland, Kershaw, Lee, and Sumter counties. There are approximately 480 employees that work to maintain the transportation system in District 1. Each of District 1's 5 counties has a County Safety Officer responsible for overseeing safety for its employees and administering safety initiatives in their respective county. The District Safety Officer oversees the work of the 5 County Safety Officers and has the responsibility of administering safety for its employees across the District.

Maintaining the transportation system involves extensive manpower and physical labor, use of numerous hand and power tools, and operation of motorized heavy equipment as well as extensive traveling and working in and around traffic and in adverse weather conditions. Maximizing our employee's safety, while maintaining our transportation system, is of utmost importance to SCDOT. Accidents and injuries are costly to individual employees and to SCDOT.

PROBLEM STATEMENT

Accident and injury data for calendar year 2017 indicates that more than 50% of the accidents and injuries in District 1 occurred to employees in their first 3 years of employment with SCDOT. Based on this data it is believed that accidents and injuries can be reduced in District 1 by developing a strategic safety training program for new employees and conducting this training BEFORE each new employee begins field work, using numerous hand and power tools, operation of motorized heavy equipment, and working in and around traffic and in adverse weather conditions.

DATA COLLECTION

Accident and injury data for each case is collected and stored in SCDOT's Risk Management Information System (RMIS). The data in the RMIS database can be grouped and queried as desired to provide conclusive information and formatted into lists or graphs. Review of accident and injury data in RMIS was conducted to determine if the data would provide useful information for developing strategic training for new employees that may be helpful in reducing accidents and injuries, lost work days, and associated costs. The following data was collected for review.

Injuries by Years of Employment¹ – this bar chart indicates the Number of Injuries that occurred in District 1 in calendar year 2017 by Years of Employment and establishes the foundation for the focus of this project.

Lost Work Days by Years of Employment¹ – this bar chart indicates the Number of Lost Work Days in calendar year 2017 by Years of Employment and further establishes the foundation for the focus of this project.

1- See Appendix A

Type and Nature of Injuries Related to Lost Work Days¹ - this chart, below the Lost Work Days by Years of Employment bar chart, defines the Types of Injuries and the Nature of How these Injuries Occurred in District 1 during calendar year 2017, and may be useful to determine the types of training that may be effective for reducing accidents and injuries.

Injuries by Types of Accidents¹ - this bar chart indicates the Number of Injuries by Types of Accidents that occurred in District 1 during calendar year 2017, and may be useful to determine the types of training that may be effective for reducing accidents and injuries.

Injuries by Type of Injury/Illness¹ - this bar chart indicates the Number of Injuries by Type of Injury/Illness that occurred in District 1 during calendar year 2017, and may be useful to determine the types of training that may be effective for reducing accidents and injuries.

Injuries by Body Part¹ - this bar chart indicates the Number of Injuries by Body Parts that occurred in District 1 during calendar year 2017, and may be useful to determine the types of training that may be effective for reducing accidents and injuries.

Injuries by Type of Equipment¹ - this bar chart indicates the Number of Injuries by Type of Equipment that occurred in District 1 during calendar year 2017, and may be useful to determine the types of training that may be effective for reducing accidents and injuries.

DATA ANALYSIS

INTRODUCTION

This data, collected from SCDOT's RMIS program, was reviewed by County and District Safety Officers familiar with field operations and associated safety concerns and awareness, and

with safety training. Their review of this data was done with a desire to understand the types and nature of injuries that have been occurring with the purpose of determining the types and methods of training that could be effective in reducing these accidents and injuries.

DATA REVIEW

Injuries by Years of Employment¹ - This data, collected for incidents from 1/1/2017 through 12/31/2017, indicates that 83 injuries occurred in District 1 in 2017 and that 51.8% (43 out of 83) of these injuries occurred in the first 3 years of employment, with 25.3% (21 out of 83) of the injuries occurring in the first year of employment, and 39.8% (33 out of 83) occurring during the first 2 years of employment. This information indicates a need to focus on reducing the accidents and injuries in the first 3 years of employment. This data will be used as baseline data and compared with subsequent data and compared to the 2017 data to determine the effectiveness of the improvement initiatives.

Lost Work Days by Years of Employment¹ – This data, collected for incidents from 1/1/2017 through 12/31/2017, identifies that 364 employee lost work days occurred in District 1 in 2017 and that 69.0% (251 out of 364) of these lost work days occurred in the first 2 years of employment, with 53.8% (196 out of 364) of the lost work days occurring in the first year of employment. This information indicates a need to focus on reducing the accidents and injuries in the first 2 years of employment. This data will be used as baseline data and compared with subsequent data and compared to the 2017 data to determine the effectiveness of the improvement initiatives.

Type and Nature of Injuries Related to Lost Work Days¹ – This data identifies the 14 injuries that resulted in all of the lost work days in calendar year 2017 and places them into 3 accident categories.

- Sprain/Strain - 8
- Trauma - 4
- Bruise/Contusion – 2

Review of the 2017 Types of Injuries and the Nature of How these Injuries Occurred was conducted by the County and District Safety Officers to identify training needs to be conducted to enhance the safety of our employees.

Injuries by Types of Accidents¹ - This data identifies the 83 injuries that occurred in 2017 and places them into 14 accident categories. The data below indicates the following categories of accidents:

- Lifting/Twisting/Muscle Strain – 14
- Vehicle Accident – 14
- Struck by Object – 11
- Struck Against Object – 9
- Slip/Trip/Fall - Same Floor Level – 8
- Insect/Snake/Animal – 6
- Puncture – 5
- Repetitive Motion – 4
- Poisonous Plant – 3
- Slip/Fall – From Vehicle – 3

- Other – 3
- Body Failure – 1
- Contact with Chemical – 1
- Slip/Trip/Fall - Elevation, Steps, Stairs – 1

Review of the 2017 Injuries by Types of Accidents was conducted by the County and District Safety Officers to identify training needs to be conducted to enhance the safety of our employees.

Injuries by Type of Injury/Illness¹ - This data identifies the 83 injuries that occurred in 2017 and places them into 10 injury categories. The data below indicates the following categories of injuries:

- Sprain, Strain – 27
- Cut, Abrasion, Puncture – 16
- Trauma (Impact, Crushed, Concussion) – 16
- Bruise, Contusion – 10
- Bite, Sting – 6
- Poisonous Plant – 3
- Foreign Body, Sliver, Dust – 2
- Dislocation – 1
- Hearing Loss – 1
- Heat Exhaustion, Heat Stroke – 1

Review of the 2017 Injuries by Type of Injury/Illness was conducted by the County and District Safety Officers to identify training needs to be conducted to enhance the safety of our employees.

Injuries by Body Part¹ - This data identifies the 83 injuries that occurred in 2017 and places them into 18 body part categories. The data below indicates the following categories of body parts:

- Back – 12
- Finger – 11
- Ribs/Side/Shoulder – 10
- Neck – 9
- Arm/Elbow – 8
- Knee – 7
- All Other – 3
- Eye – 3
- Foot – 3
- Hand – 3
- Leg/Thigh – 3
- Ankle – 2
- Ear – 2
- Head/Face – 2
- Toe – 2
- Chest – 1

- Hip/Pelvis – 1
- Waist – 1

Review of the 2017 Injuries by Body Part was conducted by the County and District Safety Officers to identify training needs to be conducted to enhance the safety of our employees.

Injuries by Type of Equipment¹ – This data identifies the 83 injuries that occurred in 2017 and places them into 29 equipment categories. Review of the 2017 Injuries by Type of Equipment was conducted by the County and District Safety Officers to identify training needs to be conducted to enhance the safety of our employees.

DATA ANALYSIS CONCLUSIONS

Review of the accident and injury data collected from RMIS indicated that more than 25% of accidents and injuries occurred to employees in their first year of employment and more than 50% of the accidents and injuries occurred to employees in their first 3 years of employment. Also, review of the lost work days collected from RMIS indicated that more than 50% of lost work days occurred to employees in their first year of employment and 69% of the lost work days occurred to employees in their first 2 years of employment. It appears that a reduction of accidents and injuries and lost work days could be realized by conducting strategic training before new employees engage in work activities.

Review of the accident and injury data by the County and District Safety Officers identified the following training needs to be conducted to enhance the safety of our employees.

- Small Hand Tool Training.
- Proper Lifting Techniques.

- Traffic and Road Awareness.
- Personal Protective Equipment (PPE) Use.
- Recognizing Pinch Points.
- Equipment Awareness.
- Housekeeping.
- Three Points of Contact.
- Weather Preparedness
- Emergency Awareness
- Chainsaw/Pole saw Training

A description of each of these training modules is found in the DISTRICT 1 NEW EMPLOYEE SAFETY TRAINING PROGRAM² discussed in the following Implementation Plan.

IMPLEMENTATION PLAN

OVERVIEW

The key to success in reducing accidents and injuries in District 1 appears to be conducting strategic training BEFORE each new employee begins work operations. Success of a strategic training program would be reflected through the data by reducing the number of accidents and injuries, and reducing the number of lost work days, thus reducing the cost of production loss.

DISTRICT 1 NEW EMPLOYEE SAFETY TRAINING PROGRAM²

Our goal in District 1 is to establish a culture of safety throughout all of its daily operations. This safety program is designed to give all newly hired employees the basic knowledge that he or she will need to work safely while on SCDOT's facilities and on South Carolina's roadways. The

New Employee Safety Training Program is focused on providing basic knowledge about the tools, equipment, vehicles and operations they are using each and every day while at work, as well as training to enhance the employee's awareness of unsafe conditions and situations. The training is designed for the Trades Specialist Series of employees and provides hands-on experience to assist them in avoiding accidents and injuries. More than half of District 1's work injuries occur to our newer employees that have been employed with the agency three years or less.

The primary focus of the District 1 New Employee Safety Training Program is to reduce the number of accidents and injuries to all employees. This program will help to limit the lost time and cost of accidents and injuries within District 1.

Safety training will be incorporated as part of New Employee Orientation that typically takes place on each new employee's first day of employment. Since most employees begin their employment with SCDOT at the beginning of a pay period, which begin on the 2nd and 17th of each month, the identified training will begin on these days each month that new employees start work. Safety training will be performed by County Safety Coordinators for each District 1 county. Uniformly beginning New Employee Orientation and Safety Training on the 2nd and 17th days of each month will enhance combining new employees from 2 or more counties into one training, with a plan to allow a maximum of 6 new employees in each training period. This will also enhance the training of County Safety Officers on the New Employee Safety Training Program as they observe and participate in the training.

PROGRAM OVERVIEW

Day 1 – Each new employee attends “New Employee Orientation” with the County Office HR Manager to review departmental policies, required new employee training, and to complete

required HR and on-boarding documents. This HR training usually lasts from around 8:00 AM to 12:00 PM. After lunch, the employees will begin safety training and receive training from the County Safety Officer in the use and importance of Personal Protective Equipment (PPE). The new employee will then spend the remainder of the afternoon with their assigned supervisor to be fitted for and receive all of their necessary PPE to include fitting for safety footwear off-site.

Day 2 - The County Safety Officer will conduct all-day classroom training on Work Zone Flagger Training and basic safety training on use of small hand tools, proper lifting techniques, using three points of contact to safely enter and exit vehicles and equipment, emergency awareness, equipment awareness (pinch points, backing, and blind spots), and weather preparedness.

Day 3 – Training on this day will be hands-on field training at a designated field location or locations. The County Safety Officer will cover demonstrated operation of chainsaws, pole saws, small hand tools, fire extinguishers, ladders, and techniques for proper lifting and carrying, and for mounting and dismounting equipment. The training will also include field demonstration of traffic and road awareness, equipment blind spots, equipment pinch points, hand signals used in safely backing equipment, handling material safely, spotting overhead dangers, and adjusting to weather conditions. Employees will participate in all of the above training.

Each County Safety Officer will complete a Safety Training Checklist for each new employee that will indicate the training completed by the employee. Each completed training module will be initialed by the trainer and the employee that completed the training. The completed checklist will be signed by the employee after completion of all of the training modules.

EVALUATION METHOD

The following District 1 2017 accident and injury data will be used as baseline information for comparison the future data collected after the start of the District 1 New Employee Safety Training Program.

1. Injuries by Years of Employment¹.
2. Lost Work Days by Years of Employment¹.

As subsequent (post 2017) accident and injury data is entered into RMIS, the data will be compared to the 2017 baseline information to determine the status and effectiveness of the training program. Success of the program will be indicated by a reduction in total annual accidents and injuries and by a reduction in lost work days. This training program will be constantly monitored and evaluated by County and District staff. Modifications to training materials and methods will be made as deemed appropriate for continual improvement to the program.

SUMMARY and RECOMMENDATIONS

As success of this program is identified by reduction of accidents and injuries and a reduction of lost workdays in District 1, this program can be considered for implementation in the other 6 Districts. The following statewide data is included.

1. Injuries by Years of Employment³.
2. Days Lost For Period – SCDOT Days Lost³.

This 2017 Statewide data indicates a similar trend to District 1's Injuries by Years of Employment. This data, collected for incidents from 1/1/2017 through 12/31/2017, indicates that

1 – See Appendix A

3 – See Appendix C

476 injuries occurred Statewide in 2017 and that 49.2% (234 out of 476) of these injuries occurred in the first 3 years of employment with 20.4% (97 out of 476) of the injuries occurring in the first year of employment and 38.4% (183 out of 476) occurring during the first 2 years of employment. This 2017 Statewide data also indicates that 5728 lost work days occurred in 2017. This information indicates a statewide need to focus on reducing the accidents and injuries in the first 3 years of employment.

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Appendices

A – District 1 2017 Data Charts and Graphs

- Injuries by Years of Employment
- Lost Work Days by Years of Employment and Type and Nature of Injuries
- Injuries by Types of Accidents
- Injuries by Type of Injury/Illness
- Injuries by Body Part
- Injuries by Type of Equipment

B – District 1 New Employee Safety Training Program

C - Statewide 2017 Data Charts and Graphs

- Injuries by Years of Employment
 - Days Lost For Period – SCDOT Days Lost
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Appendix A

District 1 2017 Data Charts and Graphs

For period 1/1/2017 through 12/31/2017

Trend By District

Claim Type = All

Injuries by Years of Employment



Note: An employee injury claim is considered a "Report Only" claim if it meets either of the following conditions:

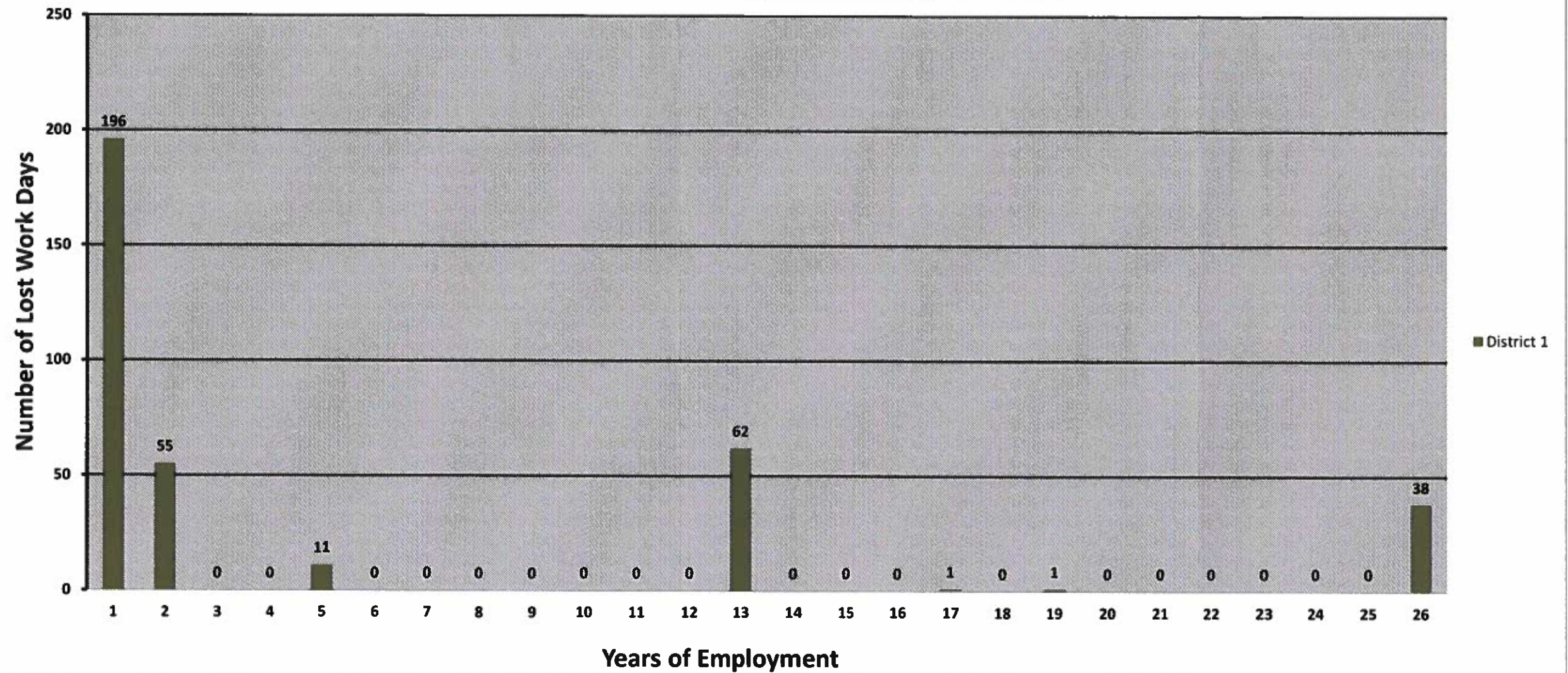
- 1) "Initial or Subsequent Treatment" is set to "No Medical Treatment".
- 2) "Initial or Subsequent Treatment" is set to "Minor by Employer" and "Does initial or subsequent medical treatment exceed First Aid?" is set to "No".

WORK YEAR LOST WORK DAYS

1	196
2	55
3	0
4	0
5	11
6	0
7	0
8	0
9	0
10	0
11	0
12	0
13	62
14	0
15	0
16	0
17	1
18	0
19	1
20	0
21	0
22	0
23	0
24	0
25	0
26	38

364

Lost Work Days by Years of Employment



Claim #	SCDOT Lost Work Days	Hire Date	Injury Date	Year	Type of Injury	How Injury Occurred
70249	38	12/1/1980	7/3/2017	26	Sprain/Strain	Lifting
70325	62	6/28/1993	8/14/2017	13	Trauma	Run over by equip
69999	139	4/6/2016	1/10/2017	1	Sprain/Strain	Shoveling
70039	30	5/17/2016	2/8/2017	1	Sprain/Strain	Stepping off trailer
70390	3	2/6/2017	9/27/2017	1	Trauma	Vehicle Accident
70409	4	11/23/2015	10/10/2017	2	Trauma	Vehicle Accident
70141	3	10/10/2016	4/25/2017	1	Trauma	Lifting inlet grate
70437	20	10/23/2017	10/26/2017	1	Sprain/Strain	Getting on/off equip
70308	1	3/17/1998	8/3/2017	19	Sprain/Strain	Vehicle Accident
70366	1	5/2/2000	9/11/2017	17	Sprain/Strain	Fell pulling limbs
70033	11	9/29/2011	1/31/2017	5	Bruise/Contusion	Getting off crane
70304	41	12/2/2015	7/11/2017	2	Sprain/Strain	Working asphalt
70118	10	3/21/2016	4/6/2017	2	Sprain/Strain	Using pole driver
70220	1	11/2/2016	6/13/2017	1	Bruise/Contusion	Fell into a hole

Total 364

Total Less than 1 year - 196 53.85% of Total Lost Days

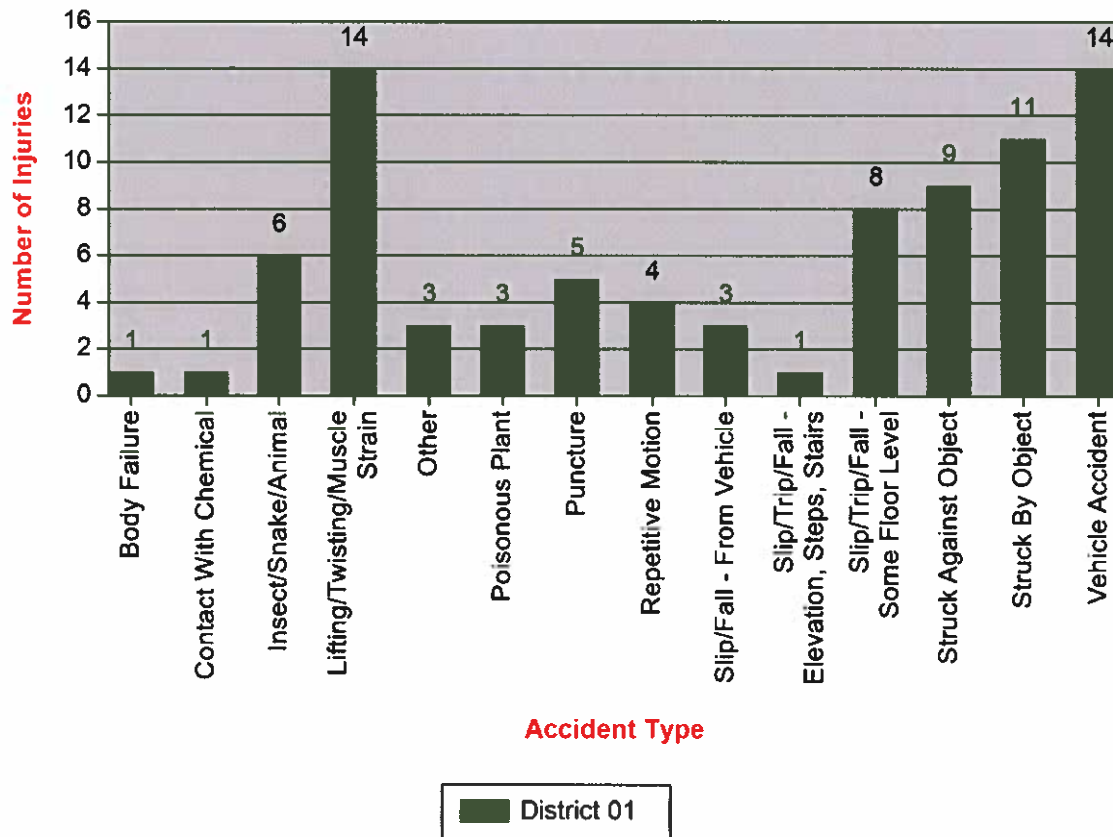
Total 1 year to 2 years - 55 15.11% of Total Lost Days

For period 1/1/2017 through 12/31/2017

Trend By District

Claim Type = All

Injuries by Types of Accidents



Note: An employee injury claim is considered a "Report Only" claim if it meets either of the following conditions:

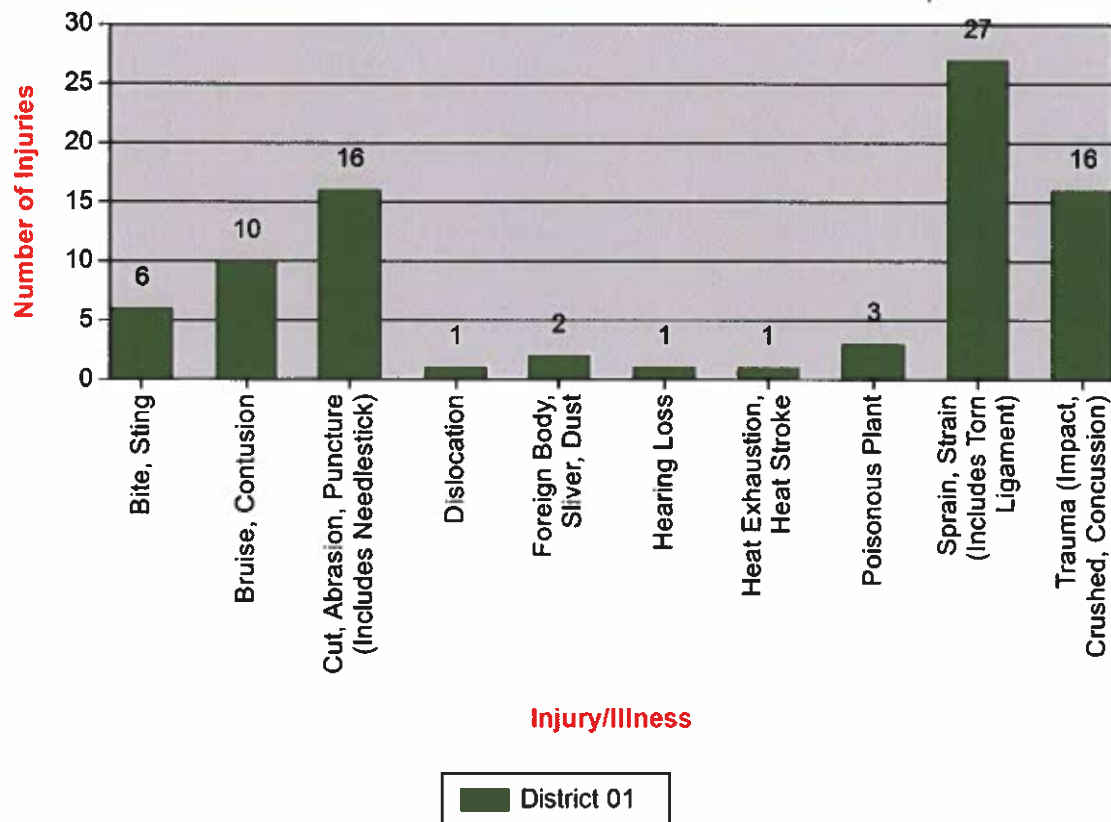
- 1) "Initial or Subsequent Treatment" is set to "No Medical Treatment".
- 2) Initial or Subsequent Treatment" is set to "Minor by Employer" and "Does initial or subsequent medical treatment exceed First Aid?" is set to "No".

For period 1/1/2017 through 12/31/2017

Trend By District

Claim Type = All

Injuries by Type of Injury/Illness



Note: An employee injury claim is considered a "Report Only" claim if it meets either of the following conditions:

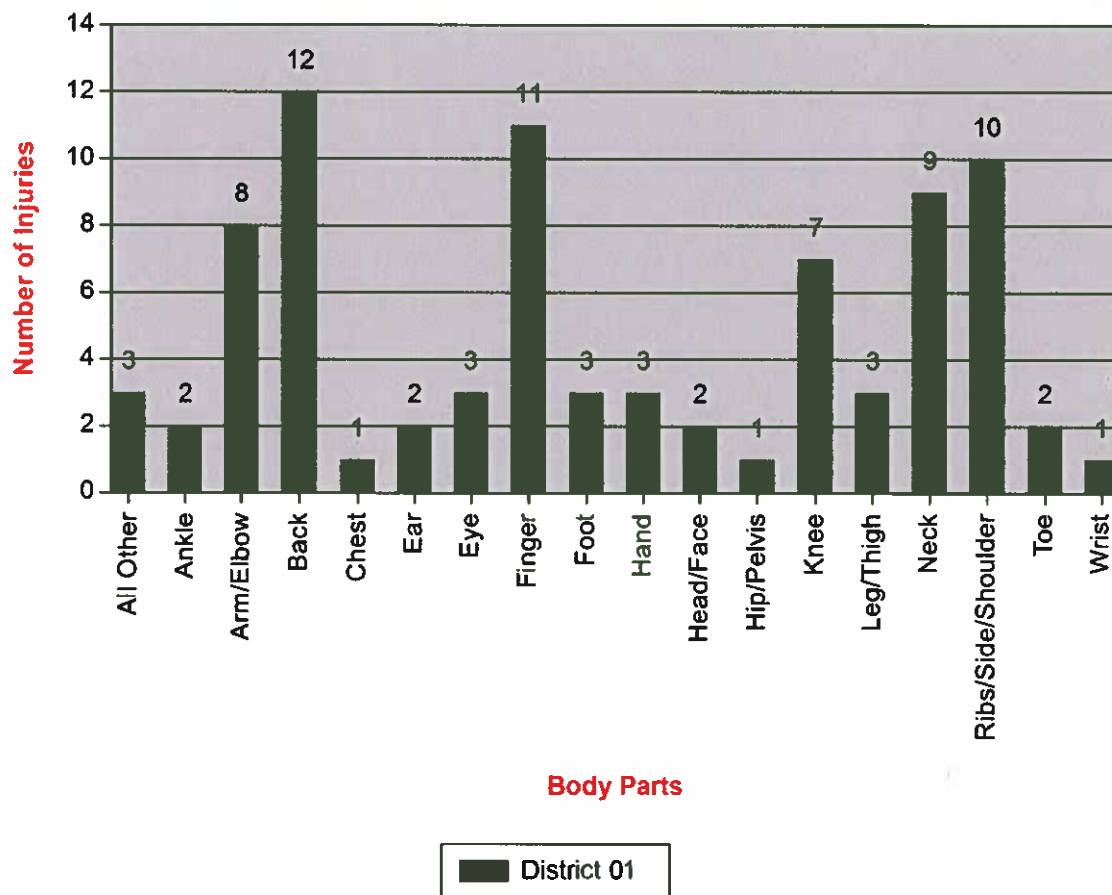
- 1) "Initial or Subsequent Treatment" is set to "No Medical Treatment".
- 2) "Initial or Subsequent Treatment" is set to "Minor by Employer" and "Does initial or subsequent medical treatment exceed First Aid?" is set to "No".

For period 1/1/2017 through 12/31/2017

Trend By District

Claim Type = All

Injuries by Body Part



Note: An employee injury claim is considered a "Report Only" claim if it meets either of the following conditions:

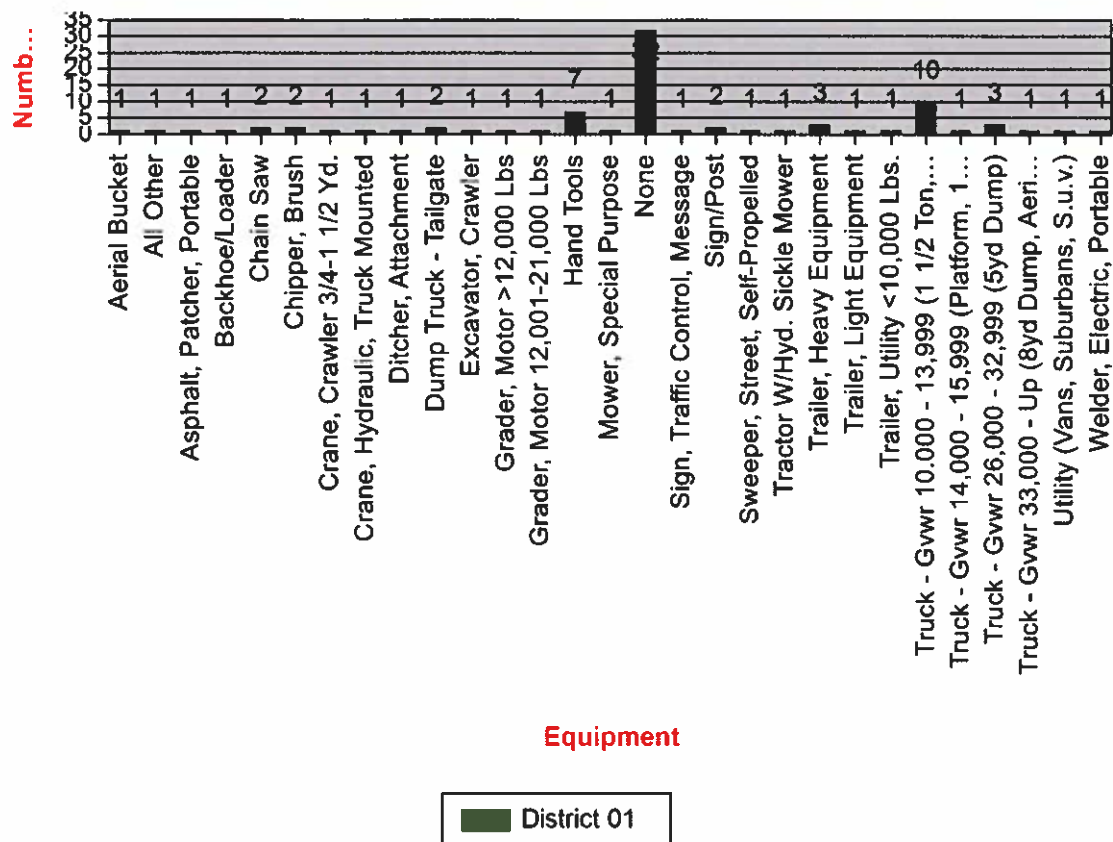
- 1) "Initial or Subsequent Treatment" is set to "No Medical Treatment".
- 2) "Initial or Subsequent Treatment" is set to "Minor by Employer" and "Does initial or subsequent medical treatment exceed First Aid?" is set to "No".

For period 1/1/2017 through 12/31/2017

Trend By District

Claim Type = All

Injuries by Type of Equipment



Note: An employee injury claim is considered a "Report Only" claim if it meets either of the following conditions:

- 1) "Initial or Subsequent Treatment" is set to "No Medical Treatment".
- 2) Initial or Subsequent Treatment" is set to "Minor by Employer" and "Does initial or subsequent medical treatment exceed First Aid?" is set to "No".

Appendix B

District 1 New Employee Safety Training Program

District 1 New Employee Safety Training Program

PROGRAM GOAL

Our goal in District 1 is establish a culture of safety throughout all of its daily operations. This safety program is designed to give all newly hired employees the basic knowledge that he or she will need to work safely while on SCDOT's facilities and on South Carolina's roadways. The New Employee Safety Training Program is focused on providing basic knowledge about the tools, equipment, vehicles and operations they are using each and every day while at work, as well as training to enhance the employee's awareness of unsafe conditions and situations. The training is designed for the Trades Specialists Series of employees and provides hands-on experience to assist them in avoiding accidents and injuries. More than half of District 1's work injuries occur to our newer employees that have been employed with the agency three years or less.

The primary focus of the New Employee Safety Training Program is to reduce the number of accidents and injuries to all employees. This program will help to limit the lost time and cost of accidents and injuries within District 1.

Safety training will be incorporated as part of New Employee Orientation that typically takes place on each new employee's first day of employment. Since most employees begin their employment with SCDOT at the beginning of a pay period, which begin on the 2nd and 17th of each month, the identified training will begin on these days each month that new employees start work. Safety training will be performed by County Safety Officers for each District 1 county. Uniformly beginning New Employee Orientation and Safety Training on the 2nd and 17th days of each month will enhance combining new employees from 2 or more counties into one training class, with a plan to allow a maximum of 6 new employees in each training period. This will also enhance the training of County Safety Officers on the New Employee Safety Training Program as they observe and participate in the training.

PROGRAM OVERVIEW

Day 1 – Each new employee attends “New Employee Orientation” with the County Office HR Manager to review departmental policies, required new employee training, and to complete required HR and on-boarding documents. This HR training usually lasts from around 8:00 AM to 12:00 PM. After lunch, the employees will begin safety training and receive training from the County Safety Officer in the use and importance of Personal Protective Equipment (PPE). The new employee will then spend the remainder of the afternoon with their assigned supervisor to be fitted for and receive all of their necessary PPE to include fitting for safety footwear off-site.

Day 2 - The County Safety Officer will conduct all-day classroom training on Workzone Flagger Training and basic safety training on use of small hand tools, proper lifting techniques, using three points of contact to safely enter and exit vehicles and equipment, emergency awareness, equipment awareness (pinch points, backing, and blind spots), weather preparedness, and housekeeping.

Day 3 – Training on this day will be hands-on field training at a designated field location or locations. The County Safety Officer will cover demonstrated operation of chainsaws, polesaws, small hand tools, fire extinguishers, ladders, and techniques for proper lifting and carrying, and for mounting and dismounting equipment. The training will also include field demonstration of traffic and road awareness, equipment blind spots, equipment pinch points, hand signals used in safely backing equipment, handling material safely, spotting overhead dangers, and adjusting to weather conditions. Employees will participate in all of the above training.

Each County Safety Officer will complete a Safety Training Checklist for each new employee that will indicate the training completed by the employee. Each completed training module will be initialed by the trainer and the employee that completed the training. The completed checklist will be signed by the employee after completion of all of the training modules.

TRAINING TOPICS and TRAINING MATERIALS

Day One

Proper Personal Protective Equipment (PPE) Use – In a classroom setting, the safety training representatives will introduce themselves and discuss the importance of wearing PPE daily in all of the tasks that they will encounter while working with SCDOT. We will view a video on SCDOT's Learning Management System (LMS) that will instruct regarding use of the vest, gloves (leather and rubber), steel toe boots, hard hat, chaps, hearing protection, safety glasses, night pants, and rain gear. The PPE materials will be placed on a table at the front of the room and the safety representative will demonstrate the proper fit of each piece of PPE. After the training the employees will be placed with their respective crew and obtain the PPE from the warehouse and will travel with the foreman to purchase boots.

Video - Found on LMS labeled PPE for Maintenance Operators.

Materials - vest, gloves(leather and rubber), steel toe boots, hard hat, chaps, hearing protection, safety glasses, night pants, and rain gear.

Day Two

The following training will be conducted by the County Safety Officer(s) in a classroom setting using video presentations, power point presentations, testing, and instruction and demonstration by the County Safety Officer.

Flagger Training - This training is part of South Carolina's Transportation Technology Transfer Service (T3S) training materials. The participants will learn how to be a safe and effective work zone flagger. They will be able to understand how to protect SCDOT workers as well as the traveling public in construction work zones on SCDOT roadways. They will be able to minimize confusion by using standard flagging procedures. There will be a written test administered after

the presentation and hands-on demonstration will be conducted in an actual work zone at a later date. Traffic and road awareness will be discussed throughout the presentation as well.

Presentation – Video located on SCDOT's Traffic Engineering website at www.dot.state.sc.us/traffic_engineering/traffic-flagger-training.aspx.

Materials - Power point, written test, and answer key can be found at www.dot.state.sc.us/traffic_engineering/traffic-flagger-training.aspx.

Small Hand Tool Training - This training will consist of two videos that discuss the importance of safely using small hand tools and using the correct tool for the task at hand.

Presentations

- Toolbox talk: Hand Tool Safety. www.youtube.com/watch?v=DSG94TNaPnQ.
- How to Use and Choose Shovels.
<https://www.youtube.com/watch?v=0AiQPWL3epE>.

Materials - Flat and spade shovels, pick axe, and hand tamp.

Proper Lifting Techniques - This training covers the ten principles of proper lifting techniques and the importance of proper body mechanics when lifting.

Presentation - Back Safety; Top Ten Lifting Rules.

www.youtube.com/watch?v=LaFoZR3gd44

Three Points of Contact - This training covers the importance of using three points of contact while entering and exiting any vehicle or equipment that the employee will encounter throughout the work shift. We will also discuss the use of ladders secured with three points of contact and give some examples of duties requiring ladders.

Presentation - Mounting and Dismounting Equipment - located in LMS.

Emergency Awareness - This training covers the basics of first aid kits, fire extinguisher use and inspection, poison ivy block, prevention and care for insect bites, snake and small animal awareness, as well as discussion of the evacuation locations for each specific organization.

Presentations - Fire Extinguisher Use and Inspection located in LMS.

- Poison Oak and Ivy located in LMS.
- Insect Bites and Stings. www.youtube.com/watch?v=wFdn8vMioio

Material – First aid kit, fire extinguisher, Venomous Snakes of SC handout, and emergency evacuation map.

Equipment Awareness - This training covers the basics of having awareness of overhead and underground powerlines while operating equipment. We will also discuss blind spot awareness and proper backing techniques.

Presentation - Overhead Powerline Safety. www.youtube.com/watch?v=U9pNZpjEHdE.

Weather Preparedness - This training covers some of the dangers of working in cold and hot environments that they will encounter working with SCDOT. Heat and cold related illnesses will be discussed as well.

Presentations

- Working in the Cold. www.youtube.com/watch?v=40P7loQjKEI.
- Safety Toolbox Talks: Heat Stress. www.youtube.com/watch?v=QWoux3EVDrc

Housekeeping - This training will cover some of the dangers of not taking action and not practicing proper housekeeping techniques in the workplace.

Presentation - Don't Walk on By - Safety Video.

www.youtube.com/watch?v=xwsmMue2q18

Traffic and Road Awareness - This training covers the importance of our employee being aware of the traffic around the work location and other vehicles or equipment that may be involved in the work zone.

Presentation - Highway workers follow precautions to stay safe in work zone.

www.youtube.com/watch?v=3pi3sdX_Ecg .

Day Three (Hands-on Field Training – demonstrations and participation)

Chainsaw/Pole saw Training – Participants will be able to understand how to inspect and maintain a chainsaw or pole saw prior to use. This includes filter changing and cleaning, proper gas and oil mixture, bar and chain oil location, levels, and bar and chain tension. The participants will also be able to demonstrate the proper PPE needed for any chainsaw operation. They will also be able to cut and remove a 4x4 timber.

Materials – Chainsaw, pole saw, hard hat, chaps, vest, gloves, hearing protection, safety glasses, boots, gas, 2 cycle oil, bar and chain oil, and 4x4 timber.

PPE Use - Participants will learn and demonstrate the basic use of proper PPE, including the vest, gloves(leather and rubber), steel toe boots, hard hat, chaps, hearing protection, safety glasses and goggles, night pants, and rain gear.

Materials – vest, gloves (leather and rubber)), steel toe boots, hard hat, chaps, hearing protection, safety glasses and goggles, night pants, and rain gear.

Small Hand Tool Training - Each employee will demonstrate the proper selection and use of both styles of shovels, pick axe, bush axe, asphalt loot, and hand tamp. Each employee will fill up an empty five gallon bucket that will be used later for the demonstration for proper lifting techniques.

Materials - spade shovel, flat shovel, pick axe, bush axe, asphalt loot, tamp, and 5 gallon bucket.

Proper Lifting Techniques – Participants will learn lifting techniques using a variety of different products and tools. They will be taught the proper way to shovel asphalt, dirt, or other materials. They will also be taught the proper way to lift materials from ground level and from elevated levels to help minimize back injuries.

Each employee will fill a 5 gallon bucket with dirt, gravel, or sand and will lift it into the bed of a pickup truck and then unload the same material. A team lift will be utilized to lift a 50 pound bag of mortar mix or concrete mix.

Materials - 5 gallon bucket, pickup truck, 50 pound bag of mortar mix or concrete mix, and shovels.

Three Points of Contact - Each employee will demonstrate the proper ways to enter and exit a vehicle or equipment while using three points of contact.

Materials - dump truck or any piece of large equipment.

Emergency Awareness - Each employee will learn to handle and use a fire extinguisher using proper methods.

Materials - fire extinguishers.

Equipment Awareness - Each employee will be shown the blind spots on the piece of equipment or truck and will sit in the operator's seat to see the blind spots first hand. This also gives them a perspective of where they should be and should not be working while at ground level. They will also demonstrate the proper hand signals for backing a truck or equipment. The participants will also learn and demonstrate the proper way to back a vehicle.

Materials - truck and equipment.

Recognizing Pinch Points - Each employee will locate pinch points on the truck and equipment. The instructor will also identify potential pinch points the students may miss.

Materials - truck and equipment.

Traffic and Road Awareness - Participants will demonstrate where they need to walk when approaching heavy equipment, vehicles, and traffic. Participants will also verbally demonstrate what they will do when they hear a backup alarm when in a work zone or other locations.

Materials - dump truck or any piece of large equipment.

FOLLOW-UP TRAINING

In order to evaluate and properly monitor the effectiveness of the training program, a follow-up program will need to be incorporated to observe each participant's grasp of safe work habits. The follow-up observation and training will be conducted quarterly by the County Safety Officer to determine each participant's compliance and skill development. The participant's Foreman, Lead Person, and/or Direct Supervisor will be included in observations, discussions, and/or coaching of

the employee as needed to train the supervisors to be knowledgeable in safety practices, to be observant of their employees, and to provide direction and coaching when needed. The follow-up training will be in effect for the first 24 months of employment or longer if needed.

Following is a list of safety categories covered in the initial training program. The observer will provide coaching and safety discussions as needed depending on the observations in order to help the employee to become aware of deficiencies and areas of needed improvements, and to reinforce safety habits. The observer may lead or request the participant to demonstrate their ability to perform certain safety functions. A checklist and notes for each participant's observation period will be developed and maintained by the County Safety Officer.

Quarterly Follow-Up Observations

Proper PPE Use - visually observe the employee's use of PPE for each task that they are involved in - vest, gloves (leather and rubber), boots (steel-toed and rubber), hard hat, chaps, hearing protection, safety glasses and goggles, night pants, and rain gear. Discuss observations, provide coaching and direction.

Flagging Duties - visually observe the employee's flagging techniques (stopping traffic, releasing traffic, two way radio communication, escape path, etc.). Discuss observations, provide coaching and direction.

Small Hand Tools - visually observe the employee's tool selection for the task they are involved in and the employee's use of proper techniques. (spade and flat shovel, pick axe, bush axe, asphalt loot, and hand tamp). Discuss observations, provide coaching and direction.

Proper Lifting Techniques - visually observe the employee's lifting techniques (lifting with legs not back, straight back, team lift, keeping material close to body, not twisting but pointing feet, etc.). Discuss observations, provide coaching and direction.

Three Points of Contact - visually observe the employee's use of the three points of contact methods when entering and exiting a vehicle or equipment (facing vehicle or equipment when entering and exiting at all times, three points used at all times, not grabbing attachment, levers, or steering wheel, etc.). Discuss observations, provide coaching and direction.

Emergency Awareness - visually observe the employee's work zone setup, habits coming into and out of the work zone, reactions to any backup alarms and any other warning indicators while on site. Discuss observations, provide coaching and direction.

Equipment Awareness - visually observe the employee's positions around equipment to determine if they are in the proper locations to stay out of swing radii of equipment and are not in any blind spots. Visually observe the employee's proximity to any pinch point locations on equipment, and ask them to point out locations that could cause this hazard. Visually observe the employee's use of the correct hand signals when backing a vehicle. Discuss observations, provide coaching and direction.

District 1 - New Employee Safety Training Program

Equipment and Supply List

Field Training Equipment and Supplies

- Van for transporting new employees
- Front end loader
- 1 empty 5 gallon bucket
- 1 sand-filled 5 gallon bucket
- 1 clean flat shovel
- 1 flat shovel with asphalt baked on
- 1 spade shovel
- 1 asphalt lute
- 1 hand tamp
- 1 pick axe
- 1 bush axe
- 1 safety vest
- 1 pair of gloves
- 1 pair of steel-toe boots
- 1 hard hat
- 1 pair of chaps
- 1 pair of hearing protection
- 1 pair of safety glasses
- 1 pair of safety goggles?
- 1 pair of night pants
- 1 rain suit
- 2 concrete blocks
- 1 bag of cement or grass seed
- 10 traffic cones

Classroom Equipment and Supplies

- Computer
- Projector
- Chairs
- Desk
- 2 stop/slow paddles
- 2 flashlights with glow cones
- Flagger written tests
- Flagger test key
- Flagger demonstration checklist

District 1 - New Employee Safety Training Program Checklist

	Trainer/Trainee Initials
<u>Proper PPE Use</u> - shown and demonstrated the proper use of the vest, gloves, boots, hard hat, chaps, hearing protection, glasses, goggles, night pants, and rain suits.	_____
<u>Flagger Training</u> - shown and demonstrated the proper use of materials and hand signals in day time, night time, and emergency flagging situations.	_____
<u>Small Hand Tool Training</u> - shown and demonstrated the proper use of a flat shovel, spade shovel, asphalt lute, hand tamp, pick axe, and bush axe.	_____
<u>Proper Lifting Techniques</u> - shown and demonstrated the proper way to lift a load from ground level and from elevated levels.	_____
<u>3 Points of Contact</u> - shown and demonstrated the proper way to enter and exit a vehicle or equipment using the 3 points of contact method.	_____
<u>Emergency Awareness</u> - shown and demonstrated proper use and locations of: First Aid Kits, Fire Extinguisher, Poison Ivy Block and emergency evacuation locations.	_____
<u>Equipment Awareness</u> - shown and demonstrated the proper places to be when working around large equipment and how to avoid being in the blind spots of large equipment when working at ground level.	_____
<u>Recognizing Pinch Points</u> - shown and demonstrated the hazards around trailers, tailgates, and articulating equipment.	_____
<u>Chainsaw/Polesaw Training</u> - shown and demonstrated the proper use, maintenance, techniques for working around, and using both a chainsaw and pole saw.	_____
<u>Traffic and Road Awareness</u> - shown and demonstrated the proper way to walk around traffic and where and how to enter a work zone while operating another vehicle.	_____
<u>Housekeeping</u> - shown and demonstrate a general awareness of items that could cause slips, trips, and falls.	_____

I, the undersigned new employee of SCDOT, do hereby certify that I have received all the above information and training described above.

Employee's Signature

Employee #

Date

Appendix C

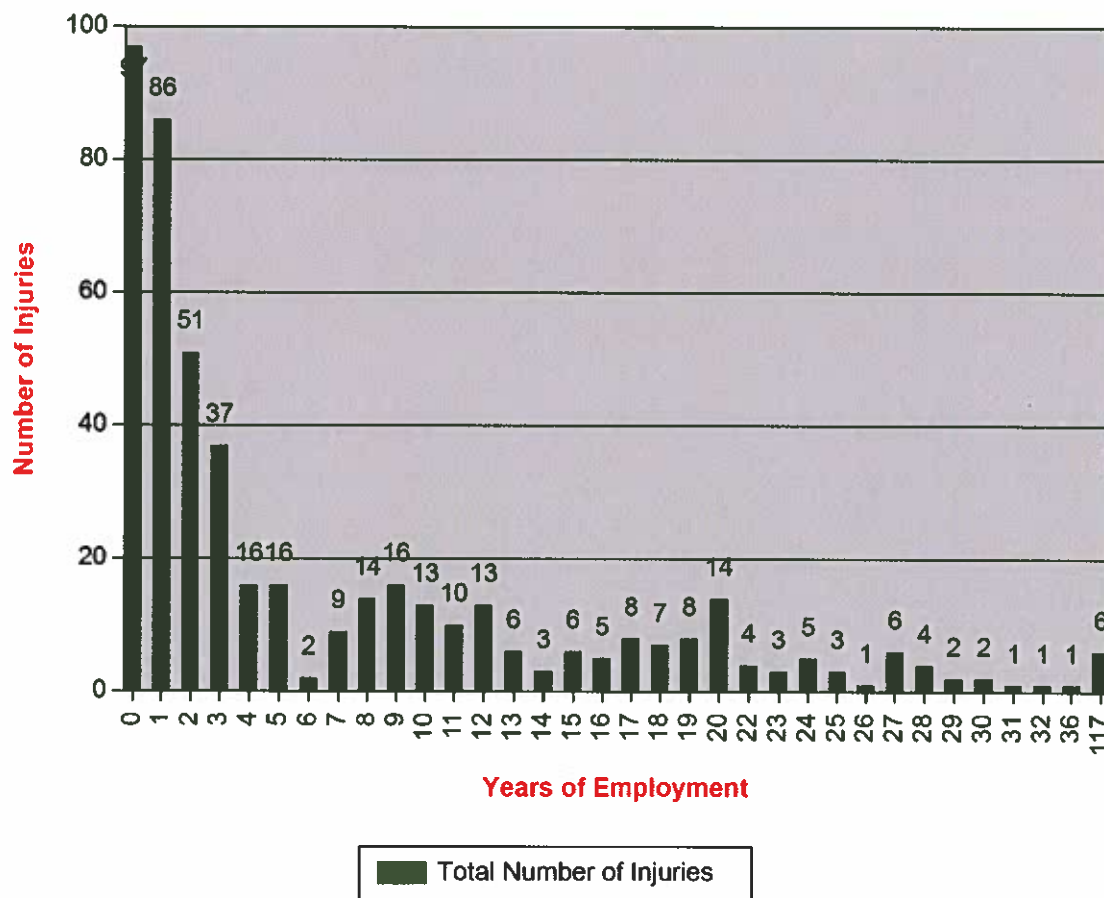
Statewide 2017 Data Charts and Graphs

For period 1/1/2017 through 12/31/2017

Trend By None

Claim Type = All

Injuries by Years of Employment



Note: An employee injury claim is considered a "Report Only" claim if it meets either of the following conditions:

- 1) "Initial or Subsequent Treatment" is set to "No Medical Treatment".
- 2) "Initial or Subsequent Treatment" is set to "Minor by Employer" and "Does initial or subsequent medical treatment exceed First Aid?" is set to "No".



For period 1/1/2017 through 12/31/2017

Trend By None

Days Lost For Period - SCDOT Days Lost



Note: Includes Days Lost regardless if injury occurred during timeframe.